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This index covers all technical items - papers, correspondence, reviews, etc. that appeared in this periodical during 1999, and items from previous years that were commented upon or corrected in 1999. In the case of magazines, departments and other items may be also covered if they have been judged to have archival value.

The Author Index contains the primary entry for each item, listed under the first author's name. The primary entry includes the coauthors' names, the title of the paper or other item, and its location, specified by the publication abbreviation, year, month, and inclusive pagination. The Subject Index contains entries describing the item under all appropriate subject headings, plus the first author's name, the publication abbreviation, month, and year, and inclusive pages. Subject cross-references are included to assist in finding items of interest. Note that the item title is found only under the primary entry in the Author Index.

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FMCW radar, lin. freq. ramp generator, fractional divider PLL. *Musch, T.*, + , *T-IM April 1999* 634-637

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H and D, 2S-12D transit., freq. meas., Rydberg const. *Schwob, C.*, + , *T-IM April 1999* 178-181

- Nd:YAG laser, I_2-stabilized, freq. meas. *Hall, J.L., +, T-IM April 1999* 583-586
- Nd:YAG laser, I_2 stabilized, interferometric freq. meas. *MacFarlane, G.M., +, T-IM April 1999* 600-603
- power syst. freq. meas., digital sig. proc., μP-based relaying. *Sidhu, T.S., T-IM Feb. 1999* 75-81

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- 3D laser range imaging, FM LD self-mixing effect. *Gagnon, E., +, T-IM June 1999* 693-699
- Nd:YAG laser, freq.-doubled, freq. stabilization, I_2 FM spectrosc. *Galzerano, G., +, T-IM April 1999* 540-543

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- flat strap sandwich shunt config., current meas., transfer std. *Castelli, F., T-IM Oct. 1999* 894-898
- open resonator, MM-wave range Q-factor meas., coupling loss. *Faby, G., +, T-IM June 1999* 688-692
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- acetylene, overtone band transit., freq. std. *Onae, A., +, T-IM April 1999* 563-566
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- Cs beam freq. std., opt. pumped, vel. distrib., 2nd-order Doppler shift. *Ho Seong Lee, +, T-IM April 1999* 492-495
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- opt. freq. comb generator, stabilization. *Sterr, U., +, T-IM April 1999* 574-577
- opt. freq. synthesis, opt.-to-microwave freq. chain. *Luiten, A.N., +, T-IM April 1999* 558-562
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Frequency stability; cf. Laser frequency stability

Frequency standards

- acetylene, overtone band transit., freq. std. *Onae, A., +, T-IM April 1999* 563-566
- at. clock, opt. freq. std. *Riehle, F., +, T-IM April 1999* 613-617
- beam freq. std., phase shift. *Makdissi, A., +, T-IM April 1999* 500-503
- CENAM-LAPEM link, common-view GPS time/freq. dissemination. *Molina, V., +, T-IM April 1999* 654-658
- commercial freq. & time stds., timing uncertainties estim. *Eskelinen, P., T-IM Feb. 1999* 62-65
- CO_2 laser, OsO_4 freq. stabilized, heterodyne freq. meas. *Madej, A.A., +, T-IM April 1999* 553-557
- CO_2/OsO_4 MIR secondary freq. std., absol. freq. meas. *Rovera, G.D., +, T-IM April 1999* 571-573
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- Cs beam freq. std., opt. pumped, vel. distrib., 2nd-order Doppler shift. *Ho Seong Lee, +, T-IM April 1999* 492-495
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- Cs, laser-cooled atoms, primary freq. std. *Berthoud, P., +, T-IM April 1999* 516-519
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- Nd:YAG laser, $^{127}I_2$-stabilized, freq. std. *Feng-Lei Hong, +, T-IM April 1999* 532-536
- OsO_4 absol. freq. grid, CO_2 laser stabilization. *Acef, O., +, T-IM April 1999* 567-570
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- semicond. laser, automatic locking, I_2 transits. *Cliche, J.-F., +, T-IM April 1999* 596-599

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- fixed-freq. synthesizer for impedance bridges, enhanced SNR. *Small, G.W., +, T-IM April 1999* 479-482
- FMCW radar, lin. freq. ramp generator, fractional divider PLL. *Musch, T., +, T-IM April 1999* 634-637
- opt. freq. synthesis, opt.-to-microwave freq. chain. *Luiten, A.N., +, T-IM April 1999* 558-562

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- intelligent tire utilizing passive SAW sensors, meas. of tire friction. *Pohl, A., +, T-IM Dec. 1999* 1041

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- memory reduction in look-up tables for fast symmetric fn. generators. *Lygouras, J.N., T-IM Dec. 1999* 1254-1258

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- Hamana-T Tokamak plasma, horiz. posn. control, vert. field generation. *Mizuno, Y., +, T-IM Oct. 1999* 1001-1004

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- image data noise cancellation, evol. neural fuzzy syst. *Russo, F., T-IM Oct. 1999* 915-920

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- GaAlAs/GaAs HBT, microwave noise param. meas. *Escotte, L., +, T-IM Aug. 1999* 830-834
- GaAs-AlGaAs quantum Hall device, AC long. resist. meas. *Cabiati, F., +, T-IM April 1999* 314-318
- GaAs MMIC six-port reflectometer calib., Engen's six-port-to-four-port reduction algm. *Wiedmann, F., +, T-IM Oct. 1999* 927-931
- GaAs pressure sensor with freq. output based on reson. tunneling diodes. *Mutamba, K., +, T-IM Dec. 1999* 1333-1338

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Gamma-ray spectroscopy

- Avogadro-project, prompt (n, γ)-spectrometry, isotopic material anal. *Rottger, S., +, T-IM April 1999* 242-244

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- O_2 conc. meas. by phosphoresc. lifetime, opt. fiber appls. *Rodriguez, J.C.C., +, T-IM Oct. 1999* 949-955

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Harmonics; cf. Power system harmonics
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Image reconstruction
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- nuc. waste cleanup, computer-assisted range image registration. *Gagnon, E., +, T-IM June 1999* 758-762

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- 3D laser range imaging, FM LD self-mixing effect. *Gagnon, E., +, T-IM June 1999* 693-699
- $Cd_{1-x}Zn_xTe$ detector-based X-ray imaging syst., timing charact. *Giakos, G.C., +, T-IM Oct. 1999* 909-914

Image sensors; cf. CCD image sensors

Imaging; cf. Biomedical imaging; Microwave imaging; Tomography

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- virtual lab. expts. in WWW environ., simul. tool. *Ferrero, A., +, T-IM June 1999* 741-746

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Infrared detectors
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- A/D converter, precision, lin. meas. methods efficiency. *Capofreddi, P.D., +, T-IM June 1999* 763-769
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- ADC automated charactn., histogram test, Gaussian noise stimulation. *Martins, R.C., +, T-IM April 1999* 471-474
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- LEMMA method, lin. error-mechanism modeling tech., analog/mixed-sig. testing. *Wrixon, A., +, T-IM Oct. 1999* 978-985

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Interference (signal); cf. Intersymbol interference

Interference suppression
- IS-95 CDMA commun. systs., complementary filter design. *Weiguang Hou, +, T-IM Feb. 1999* 34-38

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- virtual lab. expts. in WWW environ., simul. tool. *Ferrero, A., +, T-IM June 1999* 741-746

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Mechanics; cf. Density

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Micromechanical devices; cf. Microactuators

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Microwave amplifiers; cf. Microwave power amplifiers

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Microwave integrated circuits; cf. MMIC

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Microwave measurement; cf. Microwave reflectometry

Microwave phase shifters

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Microwave power amplifiers

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Microwave transistors; cf. Microwave bipolar transistors; Microwave field effect transistors

Millimeter wave field effect transistors

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HEMT, MM-wave noise param. meas. *Beland, P.*, + , *T-IM Aug. 1999* 825-829

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Mixed state; cf. Flux-line lattice

MMIC
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Monitoring; cf. Computerized monitoring; Condition monitoring; Patient monitoring

Monolithic integrated circuits; cf. Application specific integrated circuits; MMIC

Monte Carlo methods
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MOS analog integrated circuits; cf. CMOS analog integrated circuits

MOSFET
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MOS integrated circuits; cf. CMOS integrated circuits

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Motion measurement
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Motor drives; cf. AC motor drives

Moving average processes; cf. Autoregressive moving average processes

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Multidimensional signal processing
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Multiplying circuits; cf. Analog multipliers

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Network parameters; cf. S-parameters

Networks (circuits); cf. Active networks; Amplifiers; Analog circuits; Bridge circuits; Buffer circuits; Comparators (circuits); Demodulators; Detector circuits; Differentiating circuits; Equivalent circuits; Magnetic circuits; Modulators; Multiplying circuits; Phase locked loops

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Neural nets; cf. Fuzzy neural nets; Recurrent neural nets

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Noise; cf. Acoustic noise; Impulse noise; Phase noise; Random noise; Semiconductor device noise; Superconducting device noise

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Nonelectric sensing devices; cf. Optical sensors

Nonlinear distortion; cf. Harmonic distortion

Nonlinear filters
- digital envelope detect. filter for real-time operation. *Fritsch, C., + , T-IM Dec. 1999* 1287-1293
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Nonlinear systems; cf. Bilinear systems

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Nuclear chemical analysis
- Avogadro-project, prompt (n, γ)-spectrometry, isotopic material anal. *Rottger, S., + , T-IM April 1999* 242-244

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- nuc. waste cleanup, computer-assisted range image registration. *Gagnon, E., + , T-IM June 1999* 758-762

Nuclear magnetic moment
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Nuclear magnetic resonance
- magnetometer calib. setup, NMR controlled, magn. field std. *Weyand, K., T-IM April 1999* 668-671
- ^{3}He mag. moment, precision meas. in Bohr magneton units. *Flowers, J.L., + , T-IM April 1999* 209-211

Numerical analysis; cf. Curve fitting; Error analysis; Interpolation; Iterative methods; Least squares approximations; Monte Carlo methods

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Ohmic contacts
- quantized Hall resistors, ohmic contacts, contact resist. *Lee, K.C., T-IM April 1999* 319-323

Operational amplifiers
- act. AC voltage divider, power/energy calib., voltage scaling. *Petersons, O., + , T-IM April 1999* 439-443
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Optical correlation
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Optical couplers
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Optical dispersion; cf. Optical fiber dispersion

Optical elements; cf. Optical couplers; Optical fibers

Optical feedback; cf. Laser feedback

Optical fiber communication
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Optical fiber dispersion
- gratings, chromatic dispersion and polariz. sensitivity characts. *Simova, E., + , T-IM Oct. 1999* 939-943

Optical fiber lasers
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Optical fiber polarization
- gratings, chromatic dispersion and polariz. sensitivity characts. *Simova, E., + , T-IM Oct. 1999* 939-943

Optical fibers
- dynamical mapping and end-point detect. of photoresist develop. by using plastic-fiber-bundle probe array. *Lin, G.-R., T-IM Dec. 1999* 1319-1323
- SEM images ident./correl. *Yanez-Suarez, O., + , T-IM Feb. 1999* 55-61

Optical fibers; cf. Optical fiber dispersion; Optical fiber polarization; Optical fiber testing

Optical fiber testing
- gratings, chromatic dispersion and polariz. sensitivity characts. *Simova, E., + , T-IM Oct. 1999* 939-943

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- chain, absol. freq. meas. *Lea, S.N., + , T-IM April 1999* 578-582
- comb generator, stabilization. *Sterr, U., + , T-IM April 1999* 574-577
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- opt. freq. synthesis, opt.-to-microwave freq. chain. *Luiten, A.N., + , T-IM April 1999* 558-562

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- Nd:YAG laser, I_2-stabilized, freq. meas. *Hall, J.L., + , T-IM April 1999* 583-586
- Nd:YVO_4-KTP laser, $^{127}I_2$ HFS, modulation spectra. *Naicheng Shen, + , T-IM April 1999* 604-607

Optical information processing; cf. Optical correlation

Optical instruments; cf. Light interferometers; Optical scanners; Optical sensors

Optical modulation
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Optical modulation; cf. Electro-optical modulation

Optical parametric oscillators
- freq. chain, absol. freq. meas. *Lea, S.N., + , T-IM April 1999* 578-582

Optical phase matching
- $AgGaS_2$ difference-freq. mid-IR spectrometer. *Kaing, T., + , T-IM April 1999* 592-595

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Optical pumping
- Cs beam freq. std., opt. pumped, vel. distrib., 2nd-order Doppler shift. *Ho Seong Lee, + , T-IM April 1999* 492-495
- Nd:YVO_4-KTP laser, $^{127}I_2$ HFS, modulation spectra. *Naicheng Shen, + , T-IM April 1999* 604-607

Optical resonators
- open resonator, MM-wave range Q-factor meas., coupling loss. *Faby, G., + , T-IM June 1999* 688-692

Optical resonators; cf. Fabry-Perot resonators; Laser cavity resonators

Optical saturable absorption
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- expt. investig. of semicond. ring laser as opt. gyroscope. *Taguchi, K., + , T-IM Dec. 1999* 1314-1318
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Optical sensors; cf. Fiber optic sensors

Optical testing

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Optical testing; cf. Optical fiber testing

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Optical tuning; cf. Laser tuning

Optical variables measurement; cf. Ellipsometry

Optical waveguide components; cf. Optical couplers

Optical waveguides; cf. Optical fibers

Optics; cf. Fourier transform optics; Quantum optics

Optimization; cf. Genetic algorithms

Optoelectronic devices; cf. Microwave photonics; Photodetectors

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Oscillators; cf. Dielectric resonator oscillators; Optical parametric oscillators; Relaxation oscillators

Oscilloscopes

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CO_2 laser, OsO_4 freq. stabilized, heterodyne freq. meas. *Madej, A.A., +, T-IM April 1999* 553-557

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Oxygen

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Parameter estimation

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Parameter estimation; cf. Amplitude estimation; Delay estimation; Frequency estimation; Maximum likelihood estimation

Parametric oscillators; cf. Optical parametric oscillators

Partial differential equations; cf. Maxwell equations

Partial discharge measurement

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- GaAlAs/GaAs HBT, microwave noise param. meas. *Escotte, L.*, + , *T-IM Aug. 1999* 830-834
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- MM-wave noise param. meas. syst., on-wafer resist. noise source. *Beland, P.*, + , *T-IM Aug. 1999* 825-829
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Semiconductor devices; cf. Semiconductor counters; Semiconductor lasers; Thermistors

Semiconductor device testing
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Semiconductor diodes; cf. Zener diodes

Semiconductor epitaxial layers
- fiber optic photolum. meas. of semicond. epitaxial wafers. *Banerjee, S.*, + , *T-IM Feb. 1999* 45-49

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Semiconductor thin films; cf. Semiconductor epitaxial layers

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- **Sensors; cf.** Biosensors; Chemical sensors; Electric sensing devices; Force sensors; Image sensors; Infrared detectors; Intelligent sensors; Magnetic sensors; Microwave detectors; Photodetectors; Pressure sensors; Strain sensors; Surface acoustic wave sensors
- **Series (mathematics); cf.** Fourier series
- **Shielding**
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- **Shielding; cf.** Magnetic shielding
- **Ships**
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- **Sigma-delta modulation**
  - bandpass single-loop & multistage Σ-Δ modulators, compens. hardware. *Al-Janabi, M.*, +, *T-IM Oct. 1999* 873-877
  - LHC project, meas. challenge, magnet current control. *Fernqvist, G.*, *T-IM April 1999* 462-466
- **Signal classification; cf.** Image classification
- **Signal detection**
  - digital envelope detect. filter for real-time operation. *Fritsch, C.*, +, *T-IM Dec. 1999* 1287-1293
- **Signal generators**
  - cct. for generation of balanced output sigs. *Baert, D.H.J.*, *T-IM Dec. 1999* 1108-1110
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  - recursive filter impulse response, energy-based effective length. *Laakso, T.I.*, +, *T-IM Feb. 1999* 7-17
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- **Signal processing; cf.** Acoustic signal processing; Array signal processing; Deconvolution; Digital signal processing chips; Geophysical signal processing; Image processing; Multidimensional signal processing; Sensor fusion; Signal sampling
- **Signal processing equipment**
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  - IS-95 CDMA commun. systs., complementary filter design. *Weiguang Hou*, +, *T-IM Feb. 1999* 34-38
- **Signal reconstruction; cf.** Image reconstruction
- **Signal representation; cf.** Image representation
- **Signal sampling**
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  - mode-locked ring lasers with output pulse width of 0.4 ps. *Kuroda, K.*, +, *T-IM Dec. 1999* 1018-1022
  - power syst. freq. meas., digital sig. proc., μP-based relaying. *Sidhu, T.S.*, *T-IM Feb. 1999* 75-81
  - scan conversion-based transient digitizer, error correction, model ident. *Arpaia, P.*, +, *T-IM Aug. 1999* 785-792
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- **Silver**
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